1969 OPERATING SUMMARY

SOUTHAMPTON

water treatment plant

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 195
Ontario

The operating efficiency and financial status of the water treatment facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.

D. S. Caverly,
General Manager.

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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SOUTHAMPTON

water treatment plant

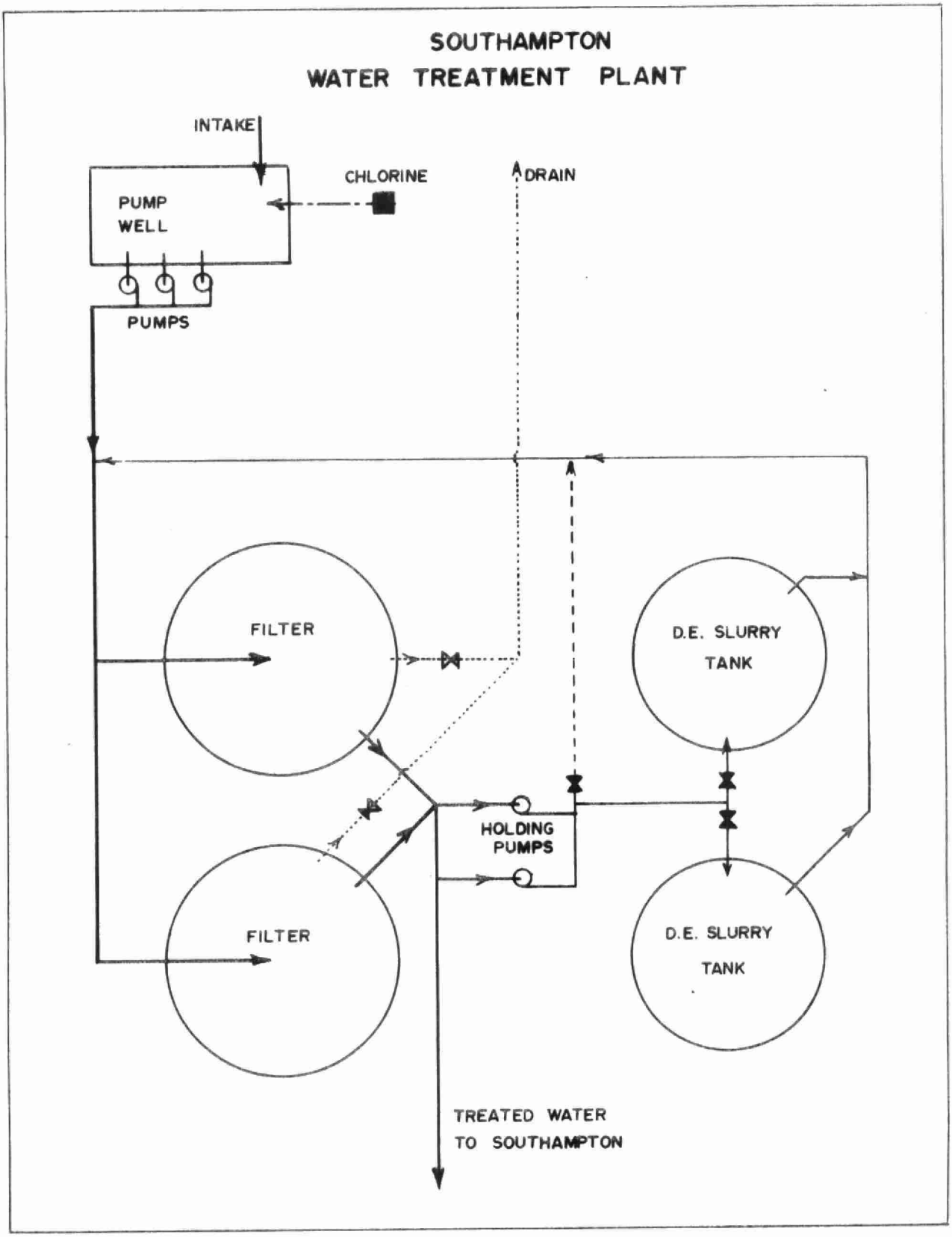
operated for

THE TOWN OF SOUTHAMPTON

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY


SOUTHAMPTON
WATER TREATMENT PLANT
INTAKE
CHLORINE
DRAIN
PUMP
WELL
PUMPS
FILTER
FILTER
D.E. SLURRY
TANK
D.E. SLURRY
TANK
HOLDING
PUMPS
TREATED WATER
TO SOUTHAMPTON

DESIGN DATA

NOMINAL CAPACITY

1.00 mgd

RAW WATER SOURCE

Lake Huron

INTAKE

Depth at crib: 15 ft
Pipe Size: 1100 ft of 24 in dia

CAPACITIES OF UNITS

Pumps: #1 700 igpm or 1.00 migd
#2 700 igpm or 1.00 migd
Standby 2100 igpm or 3.0 migd
Filters: 2 x 350 = 700 igpm or 1.00 migd

FILTRATION

Type: Bowser, pressure diatomaceous earth filter
Size: Two filters rated at 350 gpm each (1.75 gpm/ft^2)
Surface: 400 ft^2 (total)

CHLORINATION

One Fischer & Porter gas chlorinator, 50 lb/day

STORAGE

Elevated Tank 100,000 gal (owned by Town); useable volume 30,000 gal

'69 REVIEW

GENERAL

The plant suffered numerous minor problems throughout the year. Repairs and revisions to the plant process eliminated most of these, but it is anticipated that a close check on the plant's performance in the coming year may require additional alterations to the plant.

Plant capacity was again above the maximum daily flow recorded. This recorded flow still does not reflect the peak summer demands which exceed filtration capacity.

PLANT FLOWS and CHLORINATION

The total flow for the year was 101.72 million gallons, with an average of 8.48 million gallons per month. The average daily flow was 0.28 million gallons, while the maximum and minimum daily flows were 0.85 million gallons and 0.08 million gallons respectively.

A total of 1235 lbs. of chlorine was used in 1969. Applied at an average dosage of 1.2 milligrams per litre, the average monthly chlorine consumption was 103 lbs.

PROCESS CHEMICALS

A total of 72,350 lbs. of diatomaceous earth was used during the year with an average monthly consumption of 6,029 lbs. The average monthly consumption of diatomaceous earth was 858 lbs. per million gallons treated.

WATER QUALITY

Comparing laboratory results of the treated water with desirable standards, it can be seen that hardness, alkalinity, iron and colour all averaged slightly above those standards.

The plant continued to produce a high quality potable water, and all treated water samples were free from coliform bacteria.

CONCLUSIONS

Although the total flow increased slightly from 1968, the diatomaceous earth (D. E.) consumption dropped by 13,900 lbs. The repairs and alterations appear to have had a salutary effect on the amount of D. E. used.

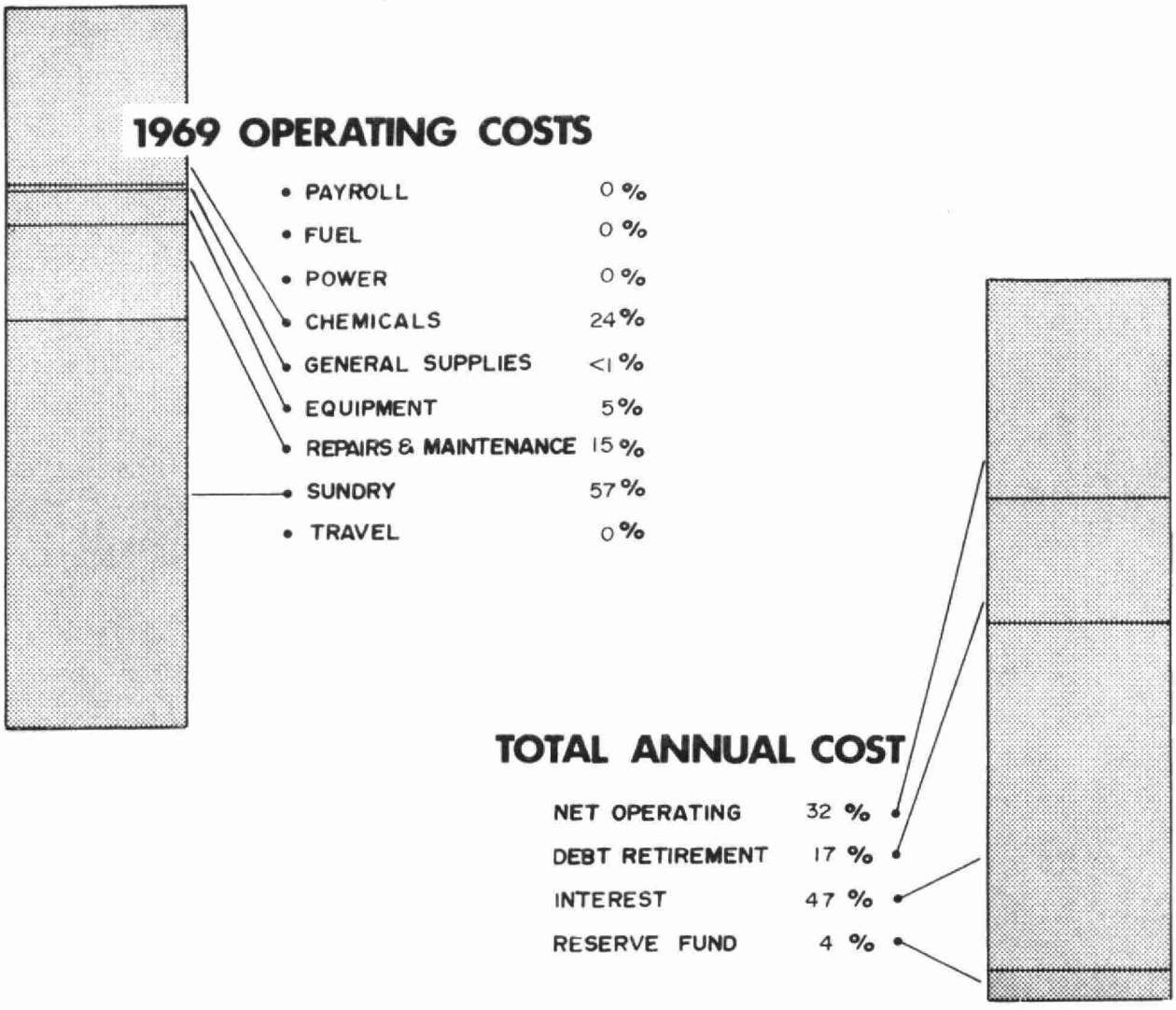
PROJECT COSTS

NET CAPITAL COST (Final) Long Term Debt to OWRC	$426,300.68
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	$ 38,332.30
Net Operating	$ 15,805.05*
Debt Retirement	8,603.00
Reserve	2,139.24
Interest Charged	23,866.38
TOTAL	$ 50,558.67

RESERVE ACCOUNT

Balance @ January 1, 1969	$ 7,106.47
Deposited by Municipality	2,139.24
Interest Earned	451.87
	$ 9,697.58
Less Expenditures	-
Balance @ December 31, 1969	$ 9,697.58

* Not including interest penalties of $145.00



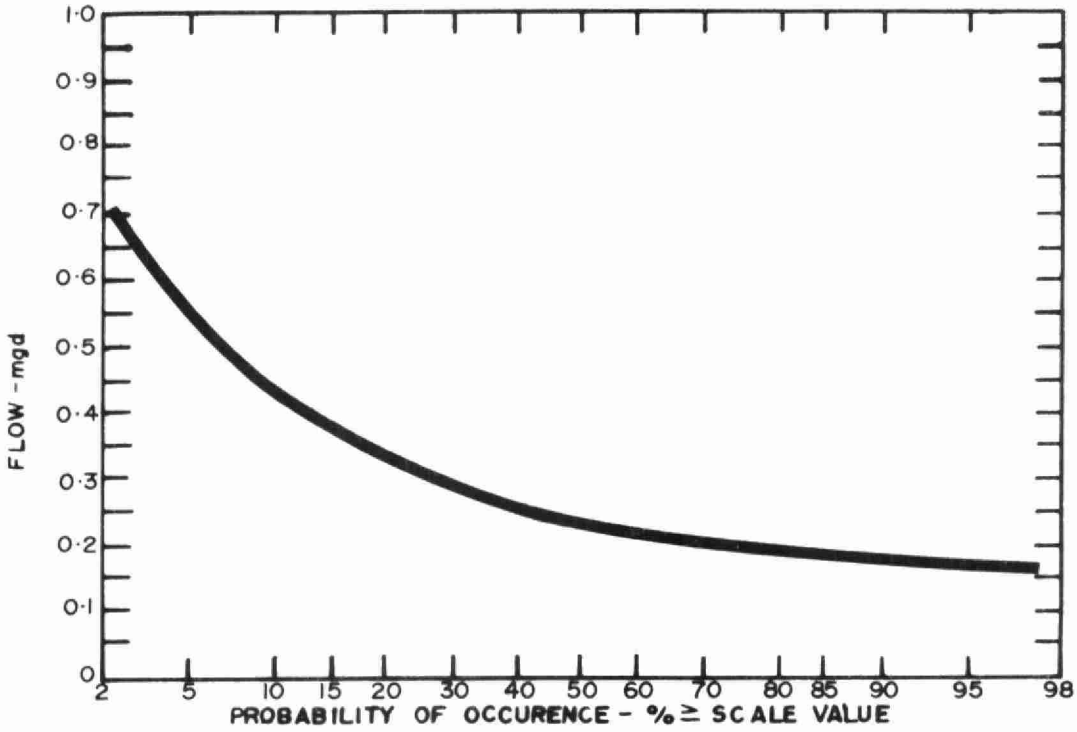
Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER THOUSAND GALLONS
1967	109.494	$17,684.60	16 cents
1968	100.89	16,778.68	17 cents
1969	101.72	15,805.05	16 cents

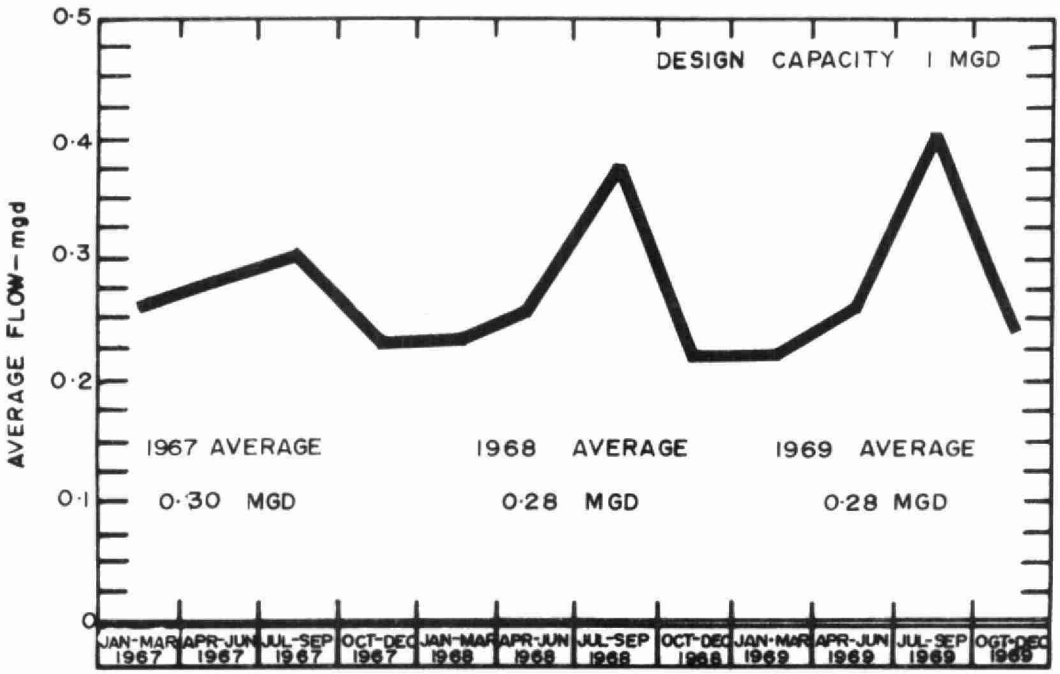
Monthly Operating Costs

MONTH	TOTAL	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY
JAN	-	-	-	-	-	-
FEB	496.84	148.58	-	-	348.26	-
MAR	541.59	-	23.77	13.33	461.00	43.49
APRIL	2596.08	-	-	-	16.70	2579.38
MAY	373.84	-	-	-	306.53	67.31
JUNE	3691.36	3516.40	47.99	-	123.38	3.59
JULY	365.21	-	-	-	365.21	-
AUG	54.23	-	-	49.79	4.44	-
SEPT	612.50	-	12.75	598.24	-	1.51
OCT	3541.52	-	-	-	-	3541.52
NOV	56.00	-	-	-	7.25	48.75
DEC	3475.88	131.25	-	167.59	461.50	2715.54
TOTAL	15805.05	3796.23	84.51	828.95	2094.27	9001.09

PROCESS DATA


1·0
0·9
0·8
0·7
0·6
0·5
0·4
0·3
0·2
0·1
0
FLOW - mgd
2
5
10
15
20
30
40
50
60
70
80
85
90
95
98
PROBABILITY OF OCCURENCE - % ≥ SCALE VALUE

FLOWS

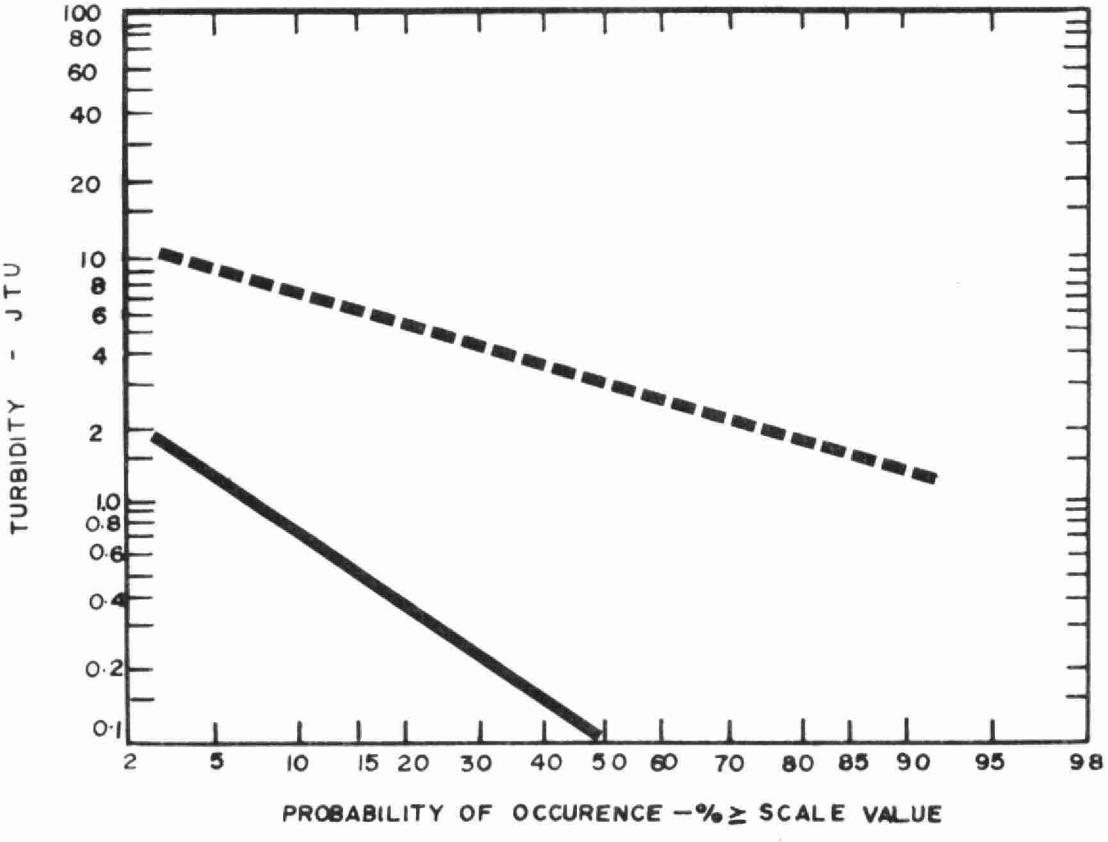

0·5
0·4
0·3
0·2
0·1
0
AVERAGE FLOW - mgd
DESIGN CAPACITY 1 MGD
1967 AVERAGE
0·30 MGD
1968 AVERAGE
0·28 MGD
1969 AVERAGE
0·28 MGD
JAN-MAR 1967
APR-JUN 1967
JUL-SEP 1967
OCT-DEC 1967
JAN-MAR 1968
APR-JUN 1968
JUL-SEP 1968
OCT-DEC 1968
JAN-MAR 1969
APR-JUN 1969
JUL-SEP 1969
OCT-DEC 1969

PLANT FLOWS

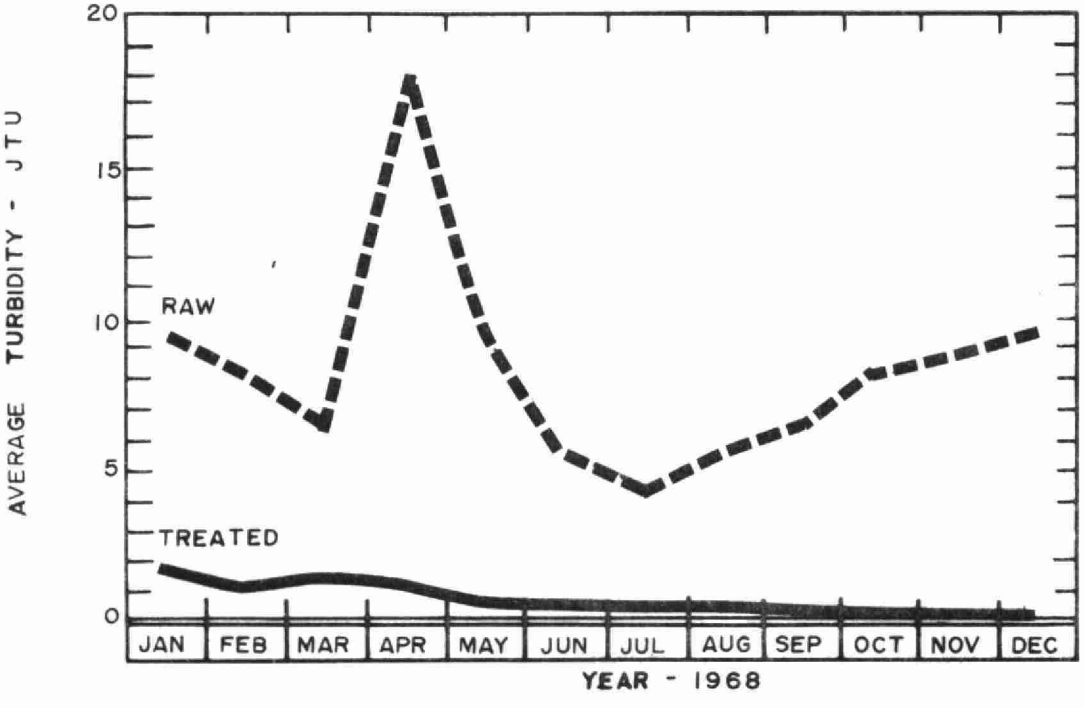
MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal
JAN	6.58	0.21	0.25	0.19
FEB	6.66	0.24	0.26	0.22
MAR	6.77	0.22	0.25	0.20
APR	6.56	0.22	0.25	0.20
MAY	7.36	0.24	0.36	0.20
JUNE	8.99	0.30	0.58	0.22
JULY	16.54	0.53	0.85	0.32
AUG	13.84	0.45	0.61	0.35
SEPT	7.09	0.24	0.52	0.13
OCT	8.49*	-	-	-
NOV	4.89**	0.16	0.22	.08
DEC	7.95	0.26	0.31	0.18
TOTAL	101.72	-	-	-
AVERAGE	8.48	0.28	-	-

* Meter inoperative during October; flows prorated on daily average
** Meter inoperative November 20 to 30; total prorated

MONTH	DIATOMACEOUS EARTH	
	AMOUNT USED (including precoat D.E.) pounds	DOSAGE pounds per million gal
JAN	6300	957
FEB	1850	278
MAR	6300	931
APR	12450	1898
MAY	7250	985
JUNE	3500	389
JULY	1000	60
AUG	2350	170
SEPT	3600	508
OCT	8400	989
NOV	8900	1820
DEC	10450	1314
TOTAL	72350	-
AVERAGE	6029	858


TURBIDITY - JTU
100
80
60
40
20
10
8
6
4
2
1.0
0.8
0.6
0.4
0.2
0.1
2
5
10
15
20
30
40
50
60
70
80
85
90
95
98
PROBABILITY OF OCCURENCE — % ≥ SCALE VALUE

TURBIDITY


AVERAGE TURBIDITY - JTU
20
15
10
5
0
RAW
TREATED
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
YEAR - 1968

Water management in Ontario